Bristol on the 31st. The average precipitation was 4.90, or 1.01 above normal; the greatest monthly amount, 12.03, occurred at Iron City, and the least, 2.01, at Newport.

The weather was, on the whole, favorable to wheat. The plant generally has good stands, is well rooted and stooled. In some eastern counties of the middle section considerable injury to early wheat by fly is reported, but altogether the prospect for wheat was better at the end of December than for many years.—*H. C. Bate.*

Texas.—The mean temperature, determined by comparison of 39 stations distributed throughout the State, was 1.8° below the normal; there was a general deficiency ranging from 1.0 to 3.8, with the greatest over the extreme western portion of southwest Texas; the highest was 90°, at Jasper on the 9th, and the lowest, 11°, at Amarillo on the 14th. The average precipitation, determined by comparison of 43 stations distributed throughout the State, was 1.25 above the normal; There was a slight deficiency over the eastern portion of north Texas, nearly normal conditions prevailed over the panhandle, west Texas, and the extreme western portion of the coast district, while over the other portions of the State there was a general excess ranging from about 1.00 to 4.23, with greatest in the vicinity of Huntsville. The greatest monthly amount, 8.06, occurred at Huntsville, and the least, 0.21, at El Paso.

The ground has been in good condition for plowing, and a great deal of this work has been done preparatory for planting spring crops. There is, however, a great deal of plowing yet to be done. There was too much rain for winter wheat in a few localities, otherwise the weather has been exceptionally favorable for the crop. Seeding was completed during the early part of December and good stands and rapid growth are reported generally. Some correspondents report that wheat prospects are better at this season than for years. Early sown has grown very rapidly and is being pastured. The acreage sown is not as great as it would have been had the weather been more favorable for this work during October and November, but the acreage is generally good.—*J. L. Cline.*

Utah.—The mean temperature was 25.2°, or 1.5° below normal; the highest was 74°, at Elgin on the 1st, and the lowest, 26° below zero, at Scipio on the 19th. The average precipitation was 0.95, or 0.04 below normal; the greatest monthly amount, 2.35, occurred at Soldier Summit, and the least, a trace, at Frisco and Pahreah.—*L. H. Murdoch.*

Virginia.—The mean temperature was 37.0°, or about 2.0° below normal; the highest was 73°, at Blacksburg on the 12th, and the lowest, 11° below zero, at Marion on the 31st. The average precipitation was 2.00, or 0.98 below normal; the greatest monthly amount, 4.06, occurred at Burkes Garden, and the least, 0.18, at Newport News.

The progress of the crops throughout the month was unusually favorable.—*E. A. Evans.*

Washington.—The mean temperature was 37.3°, or 2.7° above normal, the highest was 71°, at Bridgeport on the 9th, and the lowest, 2° below zero, at Waterville on the 18th and at Hooper on the 19th. The average precipitation was 4.79, or 0.97 below normal; the greatest monthly amount, 22.16, occurred at Clearwater, and the least, 0.58, at Ellensburg.—*A. B. Wollaber.*

West Virginia.—The mean temperature was 33.3°, or about 2.0° below normal; the highest was 77°, at Nuttallburg on the 22d, and the lowest, 17° below zero, at Green Sulphur Springs on the 31st. The average precipitation was 2.81, or 0.22 below normal; the greatest monthly amount, 4.46, occurred at Central Station, and the least, 1.22, at Parsons.—*E. C. Vose.*

Wisconsin.—The mean temperature was 21.2°, or slightly above normal; the highest was 58°, at Sharon on the 8th, and the lowest, 20° below zero, at Butternut on the 29th. The average precipitation was 1.62, or 0.36 above normal; the greatest monthly amount, 2.80, occurred at Whitehall, and the least, 0.40, at Lincoln.—*W. M. Wilson.*

Wyoming.—The mean temperature was 21.1°, or 2.3° below normal; the highest was 68°, at Cody on the 25th, and the lowest, 29° below zero, at Bittercreek on the 21st. The average precipitation was 0.69, or nearly normal; the greatest monthly amount, 1.90, occurred at Centennial and at Fort Yellowstone, and the least, trace, at Cody.—*W. S. Palmer.*

SPECIAL CONTRIBUTIONS.

RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

Science. New York. Vol. 10.
Clayden, A. W. Dark lightning. P. 973.
Quarterly Journal of Royal Meteorological Society. London. Vol. 25.
Dickson, H. N. Mean Temperature of the Surface Waters of Sea round British Coasts and its relation to Mean Temperature of the Air. P. 227.
Schaw, H. Some Phenomena connected with the Vertical Circulation of the Atmosphere. P. 305.
Scott, R. H. Heavy Falls of Rain recorded at seven Observatories connected with the Meteorological Office, 1871–1898. P. 317.
Baxendell, J. New Self-recording Anemoscope. P. 326.
Mossman, R. C. Average Height of the Barometer in London. P. 330.
Das Wetter. Berlin. 16 *Jahrg.*
Kassner, C. Wogenwolken. P. 265.
Wirz, — Beiträge zur Klimatologie des Grossen Belchen (1394 m. Höhe). P. 283.
Geographische Zeitschrift. Leipzig. 5 *Jahrg.*
Meinardus, W. Meteorologie und Klimatologie. Der VII internationale Geographenkongress zu Berlin. P. 692.
Journal de Physique. Paris. 3*me série. Tome* 8.
Folgheraiter, — Sur les variations séculaires de l'inclinaison magnétique dans l'antiquité. P. 660.
Philosophical Magazine. London. Vol. 49.
Davison, Charles. Earthquake Sounds. P. 31.
La Nature. Paris. 28*me Année.*
Meriel, P. de. Le cyclone des Antilles. P. 107.
Plumandon, J. R. Le froid dans la France centrale. P. 93.
Scientific American. New York. Vol. 82.
—— How a Weather Map is Made. P. 38.
Comptes Rendus. Paris. Tome 129.
Poincare, A. Mouvements barométriques provoqués, sur le méridian du Soleil, par sa marche en déclinaison. P. 1290.
Scientific American Supplement. New York. Vol. 49.
Bryan, G. H. Resistance of the Air. P. 20116.
Ciel et Terre. Bruxelles. 20*me Année.*
Arctowski, H. Rapport préliminaire sur les recherches oceanographiques de l'Expédition antarctique belge. P. 503.
Dewert, J. L'hiver de 1740. P. 508.
Annalen der Hydrographie und Maritimen Meteorologie. Hamburg. 28 *J.*
Messerschmitt, J. B. Ueber die Halophänomene. P. 32.
Bolletino Mensuale, Soc. Met. Italiana. Turin. Ser. II. Vol. 9.
Roberts, G. I Vortici. P. 47.
Terrestrial Magnetism and Atmospheric Electricity. Baltimore. Vol. 4.
Elster, J. and Geitel, H. Ueber die Existenz electrischen Ionen in der Atmosphäre. P. 213.
Tillo, Alexis de. Sur la rélation qui existe entre la répartition des éléments magnetiques et la distribution général des mers et de la température moyenne annuelle à la surface du globe. P. 237.
Luedeling, G. Ueber die tägliche Periode des Erdmagnetismus und der erdmagnetischen Störungen an Polarstationen. P. 245.

RATIO OF THE DISCHARGES OF THE CHAGRES RIVER AT GAMBOA AND BOHIO TO THE RAINFALL IN THE WATERSHED ABOVE THESE PLACES.

By HENRY L. ABBOT, U. S. A., Engineer of the New Panama Canal Co., dated Paris, December 9, 1899.

In my note on the regimen of the Chagres River there is an almost complete collection of the monthly mean discharges, in cubic meters per second, as measured during seven years at Gamboa and Bohio. These values are here given in Tables 1 and 2. A few observations that are missing have been supplied by the figures in brackets which also enter into the mean values of the summary, except for April, 1893, at Bohio, where, because of the small flood which occurred there at that time, we have adopted ten-sevenths (1.43) of the corresponding discharge measured at that time at Gamboa.